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| 10/621,627 | 07/17/2003 | Robert Rosenthal | 60130-1790; 03MRA0203 | 1871 |
| 26096 | 7590 | 11/21/2006 | EXAMINER | |
| CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009 | | | ROSENBERG, LAURA B | |
| | | | ART UNIT | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

1. This office action is in response to the amendment filed 15 September 2006, in which claims 7-9 were amended and claim 17 was added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Reid (5,979,612). Reid discloses a method of detecting a wheel end condition comprising the steps of:

- Providing a wheel end (best seen in figures 2a, 3, 5)
- Detecting a lateral movement of the wheel end (for example, via sensors #25 or detector #100) between a sensor (for example, including #25) and a "tone ring" on the wheel end (for example, edge of wheel as shown in dotted lines #13a' in figure 5)
- Limiting vehicle speed in response to the lateral movement reaching a predetermined value (predetermined value is dependent upon gap and displacement amounts, for example, as discussed in column 5, lines 43-51).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 4, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reid (5,979,612) in view of Bond, III et al. (6,517,172). In regards to claim 9, Reid discloses a wheel end condition detection system comprising:

- Wheel end assembly (best seen in figures 2a, 3, 5)
- Controller (for example, including sensor/actuator #25 or detector #100) detecting lateral movement of the wheel end assembly and generating a fault code (for example, output signal #100; column 6, lines 37-44) in response to the lateral movement reaching a predetermined value (predetermined value is dependent upon gap and displacement amounts, for example, as discussed in column 5, lines 43-51)
- Warning device (for example, including junction box #75; warning in form of visual and/or audible alarm; column 5, lines 5-12) activated in response to the fault code

In regards to claims 3 and 11, Reid discloses a method of detecting a wheel end condition comprising the steps of:

- Providing a wheel end (best seen in figures 2a, 3, 5)
- Detecting a lateral movement of the wheel end (for example, via sensors #25 or detector #100)

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- Limiting vehicle speed in response to the lateral movement reaching a predetermined value (predetermined value is dependent upon gap and displacement amounts, for example, as discussed in column 5, lines 43-51)
- Activating a wheel end condition warning device (for example, via junction box #75; warning in form of visual and/or audible alarm; column 5, lines 5-12) in response to the lateral movement reaching the predetermined value

In regards to claim 4, Reid does not specifically disclose that the vehicle speed is limited to approximately 5mph or less. However, It would have been obvious to one skilled in the art at the time that the invention was made to modify the step of limiting vehicle speed of Reid such that it comprised a vehicle speed of approximately 5mph or less as claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Further, a very slow speed, such as 5mph or less, would be preferred in the event that the condition of the wheel end is failing and thus creating an unsafe driving situation.

With respect to the claims above, Reid discloses limiting vehicle speed in response to the fault code by applying the brakes to a specific wheel/axle rather than by controlling a vehicle engine. Bond, III et al. teach a safety system in which vehicle speed can be limited by reducing engine torque (for example, including step #48) and/or applying a brake force (for example, including step #49). It would have been obvious to one skilled in the art at the time that the invention was made to modify the wheel end condition detection system and the method of detecting a wheel end condition of Reid

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such that it comprised controlling a vehicle engine to limit the vehicle speed as claimed in view of the teachings of Bond, III et al. so as to better control the vehicle speed quickly, safely, and effectively.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reid (5,979,612) in view of Bond, III et al. (6,517,172), further in view of Ehrlich et al. (2001/0030466). Reid discloses the predetermined value triggering a brake system fault code (for example, via brake module #22). However, Reid does not specifically disclose the brake system being an anti lock brake system. Ehrlich et al. teach a method of detecting a wheel end condition comprising the steps of providing a wheel end (best seen in figures 4, 8), detecting lateral movement of the wheel end (for example, via metal proximity sensing elements #124, 126), and limiting vehicle speed in response to a variety of data collected by sensors (by modifying air pressure level in the brake chambers; paragraph 0031; collection of sensor data can be seen in flow chart in figure 3), which triggers an anti lock brake system (ABS) fault code (integration of ECM with ABS module is discussed throughout the specification). It would have been obvious to one skilled in the art at the time that the invention was made to modify the brake system of Reid such that it comprised an anti lock brake system as claimed in view of the teachings of Ehrlich et al. so as to provide a safer braking system for the vehicle.

Allowable Subject Matter

7. Claims 7, 8, 10, 13, 14, and 16 are allowed.
8. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 15 September 2006 have been fully considered but they are not persuasive.

In regards to claim 15 and the Reid reference, the wheel detector unit (including #25) is a sensor that detects lateral movement of the wheel between the sensor and a "tone ring" on the wheel end (for example, edge of wheel as shown in dotted lines #13a' in figure 5) due to movement of the wheel from its original position to a loose/broken-off position, the loose/broken-off position located between the original position and the sensor, as can be seen in dotted lines in figure 5.

In regards to claims 3, 4, 9, and 11 and the Bond, III et al. reference, motivation for the combination of references has been set forth above. In addition, modification of the wheel end condition detection system and the method of detecting a wheel end condition of Reid such that it comprised controlling a vehicle engine to limit the vehicle speed as claimed in view of the teachings of Bond, III et al. would provide an improved and more reliable enhanced autonomous emergency braking system (Bond, III et al.: Summary of Invention).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura B. Rosenberg whose telephone number is (571) 272-6674. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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